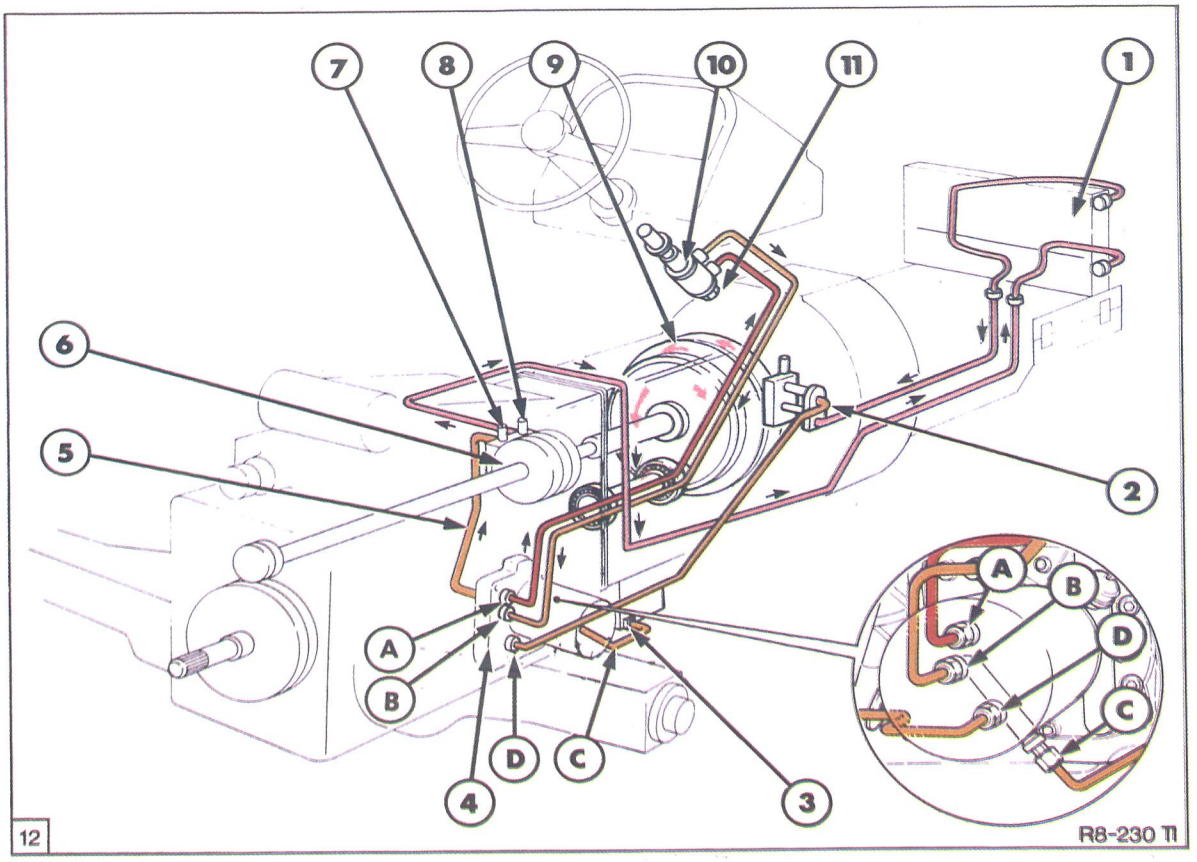


Steering, Low Pressure and Lubrication Hydraulic System Layout
(Tractors Installed with Fixed Displacement Tandem Gear Type Pump and 16 x 4 Transmission)

1. Transmission Oil Cooler
2. Dual Power Control Valve
3. FWD Solenoid Valve
4. Tandem Pump Body
5. PTO Supply Tube (Internal)
6. PTO Clutch
7. Low Pressure Regulating Valve
8. Lubrication Relief Valve
9. Dual Power Housing
10. Steering Motor
11. Steering Motor Relief Valve

A. Outlet to Steering Motor
B. Return from Steering Motor
C. Supply to Four Wheel Drive Valve
D. Supply to Dual Power Control Valve

Steering Pump Pressure Oil

Low Pressure Circuit Oil

Lubrication Circuit Oil

assembly. As the pressure is regulated, excess oil in the low pressure circuit flows through the regulating valve, into an adjacent lubrication circuit relief valve which limits the pressure of oil in the lubrication circuit to 77 lbf/in^2 (5.3 bar).

The low pressure circuit provides oil for operation of the PTO clutch, electro hydraulic differential lock (12 x 12 transmission only), dual power clutch (16 x 16 transmission only) and four wheel drive disengagement (where fitted).

The lubrication circuit on 12x12 transmission tractors provides oil to the PTO clutch, transmission synchronisers, bearing and output shaft.

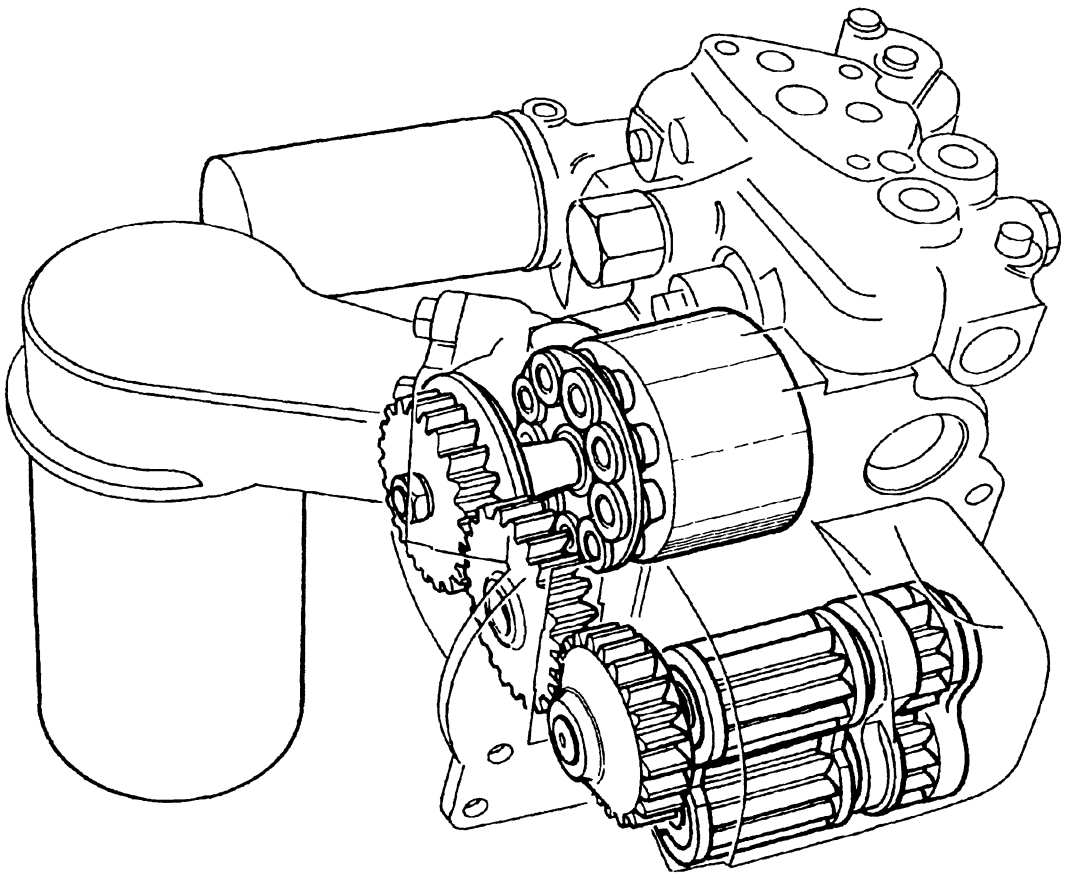
On 16 x 4 transmission tractors lubrication is provided to the dual power, transmission output shaft and PTO clutch. This is also similar to that for tractors with the 8 x 2 transmission, except that the dual power assembly is not fitted.

It will be noted in Figure 12 that the cooler bypass valve is not fitted on tractors with the 16 x 4 or 8 x 2 transmission. This valve, however, is installed on tractors with the 12 x 12 transmission and improves the oil temperature warm up in exactly the same way as described for tractors with the 16 x 16 transmission.

Repair Manual – Series 40 Tractors

HYDRAULIC SYSTEMS – HYDRAULIC PUMP ASSEMBLY WITH VARIABLE DISPLACEMENT CLOSED CENTRE LOAD SENSING

Part 8 – Chapter 2



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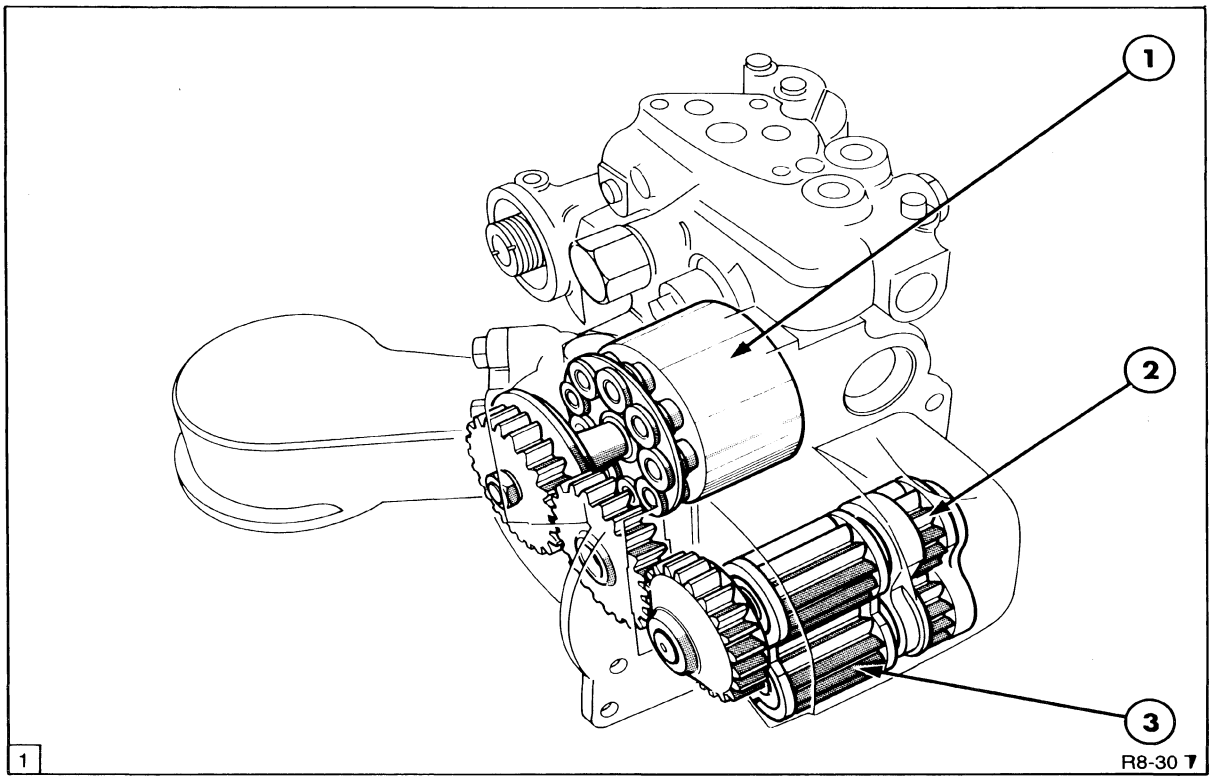
PART 8
HYDRAULIC SYSTEMS
Chapter 2
HYDRAULIC PUMP ASSEMBLY WITH VARIABLE DISPLACEMENT CLOSED CENTRE LOAD SENSING (CCLS)

A. DESCRIPTION AND OPERATION



Hydraulic Pump Assembly With Variable Displacement Closed Centre Load Sensing

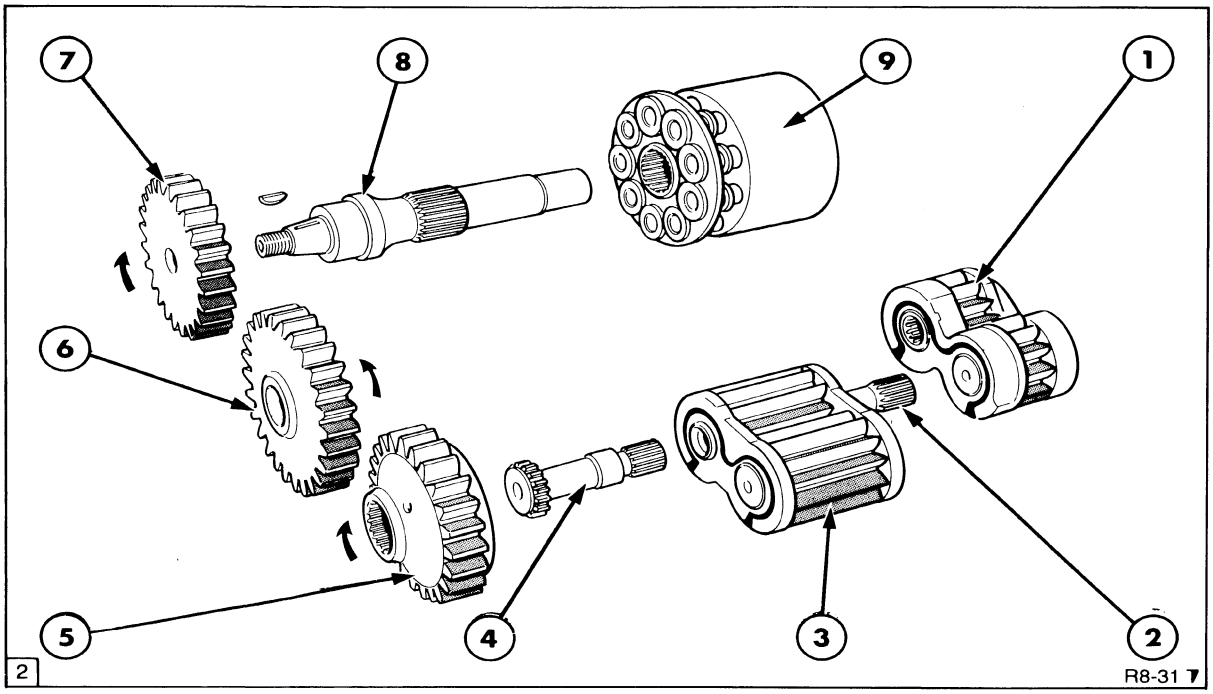
1. Variable Displacement Piston Type Pump
2. Fixed Displacement Gear Type Pump–Steering
3. Gear Type Charge Pump

The hydraulic pump assembly, Figure 1, is mounted on the right hand side of the rear axle centre housing and contains within its body three hydraulic pumps.

- A charge pump of the gear type, supplies oil at a charge pressure of 23–50 lb/in^2 (1.6–3.4 bar) to a variable displacement piston pump.

- A variable displacement piston type pump installed in a closed centre load sensing system, supplying oil for the requirements of the trailer brake system and the regulated pressure circuit for the power take off (PTO), differential lock, four wheel drive disengagement system, transmission control valves and remote and hydraulic lift valves.

- A fixed displacement pump of the gear type, supplying oil for operation of the hydrostatic steering system and transmission and PTO lubrication circuits.

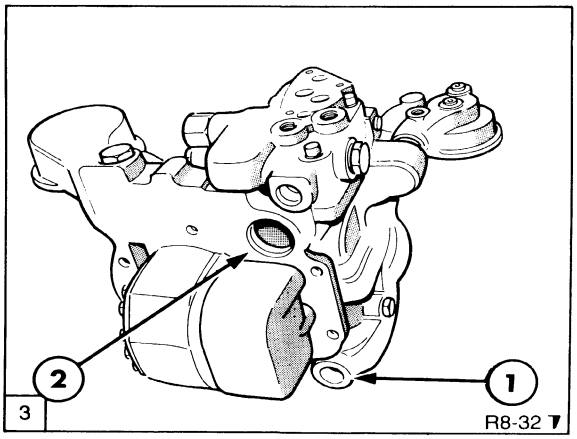


Hydraulic Pump Assembly Drive Train

1. Steering Pump (Gear Type)
2. Drive Link–Charge to Steering Pump
3. Charge Pump (Gear Type)
4. Drive Link–Drive Gear to Charge Pump
5. Charge and Steering Pump Drive Gear
6. Pump Idler Gear
7. Variable Displacement Pump Drive Gear
8. Variable Displacement Pump Drive Shaft
9. Variable Displacement Pump (Piston Type)

Illustrated in Figure 2, is the drive train for the charge and steering gear pumps and variable displacement piston pump. Note the mechanism which adjusts the swash of the pistons in the piston pump has been omitted for clarity.

All three pumping elements are driven through the charge and steering pump drive gear. This is in turn is driven by a gear on the independent power take off (P.T.O.) drive clutch hub and an idler gear mounted on the rear of the transmission.



Charge and Steering Pump Intake Ports

1. Steering Pump Intake Port
2. Charge Pump Intake Port

Charge and Steering Pumps

The steering pump is mounted behind the charge pump and driven by a drive link directly connecting the two pumps.

The charge pump supplies oil to the variable displacement piston pump while the steering pump supplies oil to the hydrostatic steering system and transmission and P.T.O. lubrication circuit.

Oil for both the charge and steering pump circuits is drawn from the rear axle centre housing using two separate intake ports, Figure 3.

External pipework links the steering pump to the steering system.

NOTE: *The relief valve for the steering system is located within the steering motor.*